coverage of the photochemistry of nucleic acids is quite complete, and from this point of view the volumes are a success. In some of the chapters, the authors have succeeded in laying out clearly the principal elements of the topic, with judicious evaluation of the sometimes conflicting reports and claims in the literature. Such chapters include two on the photochemistry of DNA (by R.O. Rahn and M.H. Patrick) and a chapter on photoreactivation (by H. Harm).

The coverage of the more biological aspects of the subject is very much less complete, as indicated by the limited space allocated to the coverage of photobiology. The omission of a systematic treatment of DNA repair processes (except for photoreactivation) is the most serious weakness of these volumes from the standpoint of photobiologists.

FRANKLIN HUTCHINSON
Department of Molecular Biophysics and Biochemistry
Yale University School of Medicine

VITAMIN C: ITS MOLECULAR BIOLOGY AND MEDICAL POTENTIAL By Sherry Lewin. New York, Academic Press, 1976. 231 pp. £7.80.

The National Research Council recommends an adult daily allowance of 45 mg of vitamin C. It is generally accepted that the anti-scorbutic effects of the vitamin result from its role in erythropoiesis, in tyrosine metabolism, and in the hydroxylation of proline residues in collagen precursors. Further, ascorbic acid may block the oxidation of body catecholamine stores and may play a role in carbohydrate metabolism, because scorbutic animals are hyperglycemic. In *Vitamin C: Its Molecular Biology and Medical Potential,* Sherry Lewin describes the profound prophylactic and therapeutic effects of "mega-intake" [several grams daily] of the vitamin. Lewin attempts to provide a theoretical basis by which ascorbic acid, when taken in large quantities, acts as an inhibitor of carcinogenesis, as a partial cure for atherosclerosis, cancer, and the common cold, and as a reliever of mental stress and a facilitator of synaptic transmission.

The book suffers from a lack of both supporting experimental data and critical analysis. It is central to Lewin's hypothesis, for example, that "mega-intake" of vitamin C be shown to increase tissue ascorbic acid or metabolite levels, because many scientists contend that mega-dosages of the vitamin are lost in the urine [that is, the daily intake of 45 mg saturates body tissues]. Lewin does not present such data.

Lewin reports that ascorbic acid inhibits cyclic nucleotide phosphodiesterase in broken cell preparations and concludes that, *in vivo,* the vitamin increases the cellular levels of cyclic AMP and cyclic GMP throughout the body. Lewin theorizes, then, that the effects of vitamin C on cell growth, histamine action, the common cold, steroid synthesis, and mental depression, to mention a few examples, are mediated via cyclic AMP and cyclic GMP. However, Lewin fails to test whether ascorbic acid is able to elevate cyclic nucleotide levels in intact cell preparations. Moreover, even if the vitamin can be shown to increase the levels of the nucleotides, the physiological significance of this finding would remain unclear, for the role of cyclic AMP and cyclic GMP in most cell processes is very poorly understood.

Lewin suggests that vitamin C reverses atherosclerotic lesions, because greater than 20 mg/dl of ascorbic acid partially dissolves, with vigorous shaking, calcium/phospholipid/cholesterol precipitates. However, the intake of 1 gm. of vitamin C

per hour elevates serum ascorbate from about 1 mg/dl to a maximum of 4 mg/dl. Again, the physiological significance of Lewin's observation is questionable.

After stress or ACTH secretion, adrenocorticosteroid secretion is associated with decreased adrenal cholesterol and ascorbate. From this finding, Lewin hypothesizes that vitamin C plays an important role in the synthesis of adrenal steroids. He does not, however, satisfactorily address the observations that adrenocorticosteroid secretion is normal in scorbutic individuals and that steroid secretion in perfused adrenal glands is not affected by the concentration of vitamin C in the perfusate.

One should look elsewhere for a critical review of the biological actions and potential medical value of vitamin C.

ERIC J. NESTLER
Medical Student
Yale University School of Medicine

LEUCOCYTE MEMBRANE DETERMINANTS REGULATING IMMUNE REACTIVITY. By V.P. Eijsvogel, D. Roos and W.P. Zeijlemaker. New York, Academic Press, 1976. 776 pp. $26.50.

This book contains the proceedings of the Tenth Leucocyte Culture Conference held in Amsterdam in 1975 and is the latest in a series of volumes summarizing those meetings. The theme of the meeting as expressed in the book title concerned the possible role of membrane structures in a variety of immunobiological phenomena. The 140 contributions are grouped into six sections ranging from "Ligand binding and subsequent changes in membrane properties" to "Mediation of effector functions by membrane determinants in different leucocyte subpopulations." Within each section presentations are grouped into three categories: complete papers followed by a transcript of the discussion of the paper, complete but brief presentations and abstracted presentations. Most of the contributions are concerned with lymphocyte activity although in some sections studies involving macrophages, neutrophils and polymorphonuclear leucocytes are presented. In general the major contributions are of high quality. Some of the abstracted presentations suffer from an excessive use of abbreviations and acronyms to the point of making the report unintelligible.

This book may be most useful to those well versed in cellular immunology and membrane immunology and essentially gives the "state of the art" as of 1975 in these rapidly developing areas. The information presented would probably be less useful to those not directly involved or acquainted with these particular areas.

ROBERT E. CONE
Department of Pathology
Yale University School of Medicine

HUMAN TUMORS IN SHORT TERM CULTURE: TECHNIQUES AND CLINICAL APPLICATIONS. Edited by P.P. Dendy. London, Academic Press, 1976. 344 pages. $24.00.

This book is based on the proceedings of a meeting on "Clinical Applications of Short Term Cultures of Human Tumor Biopsy Specimens" held in Cambridge, England, in September, 1974. The 32 papers in the volume give a detailed overview of this subject, from the methodology of cell and organ culture to the routine use of short term cultures as clinical tools in the diagnosis and treatment of cancer.